DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIATION DIVISION

Technical Guidance Document #1

Use of Geophysical Methods at UST Corrective Action Sites

Many firms have considered the use of geophysical methods, particularly ground-penetrating radar (GPR) to identify lithologic changes, free product plumes, and the location of buried tanks at leaking underground storage tank sites. Current literature cites various problems with GPR and other geophysical methods due to cultural interferences such as steel-reinforced concrete, or metal debris which tend to absorb the signal. Other methods, such as electromagnetic surveys (EM), are useful for locating buried USTs or drums, but are also subject to electrical and metallic interference.

It is important for all parties to recognize that the DEQ can not approve of scientific/engineering methods that are inappropriate for site conditions at LUST sites and will not recommend PTRCB approval for sites where the method does not work. At present geophyscial methods are not widely used by consultants for UST investigations primarily due to the smaller size of the sites and the amount of interferences. Until specific geophysical methods are proven to be accurate and cost-effective for LUST investigations, the DEQ will only approve of a method where site conditions indicate a high potential for its success.

The DEQ will consider use of geophysical techniques under the following conditions:

1. It can be easily demonstrated that use of the proposed geophysical method is more cost-effective than other conventional investigation methods and that the method is appropriate for specific geologic and hydrogeologic site conditions.
2. Use of the method is well documented for the LUST-related application. Documentation required for DEQ approval includes: technical data and conclusions from specific sites where your firm has utilized the geophysical technique, and case incident studies from professional papers citing the success of the method for the proposed application. In addition, case incident studies must include the name and location of the LUST site, a summary of the data from the site, and the regulatory agency having jurisdiction over the project.
3. All geophysical data must be verified for accuracy using conventional investigative techniques such as soil borings or groundwater monitoring wells.

If a proposed geophysical method is not approved by DEQ, due to inappropriateness or potential for problems associated with interferences, the consulting firm may attempt to use the method at its own cost to demonstrate and verify the accuracy of the method. DEQ encourages firms with a high degree of confidence in these methods to publish their

results and provide copies of all data to the DEQ for consideration of future changes to this policy.